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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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DARBY & DARBY P.C.
P. O. BOX 5257
NEW YORK, NY 10150-5257

EXAMINER	
HOLLIDAY, JAIME MICHELE	
ART UNIT	**PAPER NUMBER**
2617	

DATE MAILED: 05/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/748,698	MIKKOLA, JYRKI	
	Examiner	Art Unit	
	Jaime M. Holliday	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 9-11* is/are rejected.

7)☒ Claim(s) *8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment

Response to Arguments

1. Applicant's arguments with respect to **claims 1-10** have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claim 11** is rejected under 35 U.S.C. 102(b) as being anticipated by **Suzuki (JP 06224824 A)**.

Consider **claim 11**, Suzuki clearly shows and discloses a wireless call deliver volume receiver which improves the structure of the sounding body, reading on the claimed "integrated radio telephone structure," (paragraph 1). In the card type wireless call delivery volume receiver that has the cross-section horseshoe-shaped receiving antenna, which made the receiving machine box object serve a double purpose, one side of the receiving antenna of the wireless call delivery volume receiver is monotonous with a plate like piezoelectric transducer thin to the inside of a conductor. Formation of a sounding body is carried out with a conductor, which is characterized by having a driving signal

from a receiver circuit to said piezoelectric transducer causing the sounding body to sing. The signal that drives a piezoelectric transducer through a low pass filter is sent out to the electrode plate, and as a result, the receiving antenna vibrates, reading on the claimed "integrated radio telephone structure comprising at least one planar antenna having a planar element configured to perform radio-frequency and audio-frequency operations; and at least one piezoelectric element attached to the planar element, wherein the piezoelectric element induces a periodic movement of at least a portion of the planar element beyond the location of the piezoelectric element," (paragraph 5).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claims 1-4 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Saarma et al. (U.S. Patent 6,198,206 B1)** in view of **Suzuki (JP 06224824 A)**.

Consider **claim 1**, Saarma et al. clearly show and disclose an audio/inertial signal generator coupled to the housing of a pager or cellular phone, reading on the claimed "integrated radio telephone structure," wherein an actuator is formed of a material such as a ferroelectric or piezo-material and is mechanically in contact with a body of polymer. In one embodiment the piezo-electric member is assembled to a region of a wall or surface, for example, of a housing. The piezo-electric member is preferably compression-bonded to one or more electroded sheets or to a patterned metal shim or the like. This construction enables the piezo member to be actuated as a single body and engage in vibration or relatively fast changes of state, reading on the claimed, "integrated radio telephone structure, which radio telephone comprises an audio amplifier and at least one planar element for both a first and a second function, said planar element belonging to an antenna in the radio telephone and the second function being periodic movement of said planar element, for which the structure comprises a piezoelectric element attached to said planar element, wherein the periodic movement occurs in at least a portion of the planar element beyond the location of the piezoelectric element," (column 2 lines 9-34 and column 3 lines 32-33). It is inherent that the cellular telephone coupled to the generator, reading on the claimed "integrated radio telephone structure which radio telephone comprises and audio amplifier."

However, although it is known in the art that the housing of cellular phones may comprise the antenna, and Saarma et al. clearly show and disclose that the piezo-electric member is assembled to the housing, Saarma et al. fail to explicitly disclose that the piezo-electric member or body of polymer belongs to the antenna.

In the same field of endeavor, Suzuki clearly shows and discloses a wireless call deliver volume receiver which improves the structure of the sounding body, reading on the claimed "integrated radio telephone structure," (paragraph 1). In the card type wireless call delivery volume receiver that has the cross-section horseshoe-shaped receiving antenna, which made the receiving machine box object serve a double purpose, one side of the receiving antenna of the wireless call delivery volume receiver is monotonous with a plate like piezoelectric transducer thin to the inside of a conductor, reading on the claimed "integrated radio telephone structure, which radio telephone comprises at least one planar element for both a first and a second function, said planar element belonging to an antenna in the radio telephone and the second function being periodic movement of said planar element, for which the structure comprises a piezoelectric element attached to said planar element," (paragraph 5).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a receiving antenna with a piezoelectric transducer as taught by Suzuki in the signal unit, reading on the

claimed "integrated radio telephone structure," of Saarma et al. so it may more efficiently vibrate, flex, beep or emit audio signals (Saarma et al.; abstract).

Consider **claim 2**, Saarma et al., as modified by Suzuki, clearly show and disclose the claimed invention **as applied to claim 1 above**, and in addition, Saarma et al. further disclose circuit elements, that may include audio amplifier, voice or sound generator, or filter/signal processing, may be incorporated in the planar construction and configured to adapt one or more portions of the signal unit **100** to emit audio sound, or to sense audio or tactile signals, reading on the claimed "piezoelectric element is coupled to an audio amplifier output, whereby said periodic movement of the planar element causes generation of sound," (column 10 lines 15-24).

Consider **claim 3** Saarma et al., as modified by Suzuki, clearly show and disclose the claimed invention **as applied to claim 2 above**, and in addition, Suzuki further discloses that the receiving antenna is horseshoe-shaped, reading on the claimed "antenna has a first and second branch," (paragraph 5). A driving signal from the receiver circuit to said piezoelectric transducer. The signal that drives a piezoelectric transducer through a low pass filter is sent out to the electrode plate, and as a result, the receiving antenna vibrates. If the receiving antenna us nickel sheet metal and the area of the counterelectrodes of a piezo electric transducer us 25 cm, the sensitivity of singing becomes 70 dB if the electrostatic capacity is 0.6 micro F and resonance frequency is 300Hz, reading on the claimed "a radiating plane of said antenna has a first branch and a second

branch to produce two bands, said planar element being the first branch of the radiating plane," (paragraphs 5 and 8).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a horse-shaped receiving antenna that vibrates as taught by Suzuki in the signal unit, reading on the claimed "integrated radio telephone structure," of Saarma et al. so it may more efficiently vibrate, flex, beep or emit audio signals (Saarma et al.; abstract).

Consider **claim 4**, as modified by Suzuki, clearly show and disclose the claimed invention **as applied to claim 3 above**, and in addition, Suzuki further discloses that one side of the receiving antenna of the wireless call delivery volume receiver is monotonous with a plate like piezoelectric transducer thin to the inside of a conductor, reading on the claimed "a second piezoelectric element which is attached to the second branch of the radiating plane," (paragraph 5).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a plate like piezoelectric transducer, reading on the claimed "piezoelectric material," as taught by Suzuki in the signal unit of Saarma et al. so it may more efficiently vibrate, flex, beep or emit audio signals (Saarma et al.; abstract).

Consider **claim 10**, Saarma et al., as modified by Suzuki, clearly show and disclose the claimed invention **as applied to claim 1 above**, and in addition, Saarma et al. further disclose that the signal actuator **10** generally has a sheet like form and is itself assembled or formed with upper, middle and lower layers.

The middle layer includes an electroactive material, such as a piezoceramic material, reading on the claimed "piezoelectric element is made of a ceramic material" (column 4 lines 10-16).

Consider **claim 11**, Saarma et al. clearly show and disclose an audio/inertial signal generator coupled to the housing of a pager or cellular phone, reading on the claimed "integrated radio telephone structure," wherein an actuator is formed of a material such as a ferroelectric or piezo-material and is mechanically in contact with a body of polymer. In one embodiment the piezo-electric member is assembled to a region of a wall or surface, for example, of a housing. The piezo-electric member is preferably compression-bonded to one or more electroded sheets or to a patterned metal shim or the like. This construction enables the piezo member to be actuated as a single body and engage in vibration or relatively fast changes of state, reading on the claimed, "integrated radio telephone structure, which radio telephone comprises an audio amplifier and at least one planar element for both a first and a second function, said planar element belonging to an antenna in the radio telephone and the second function being periodic movement of said planar element, for which the structure comprises a piezoelectric element attached to said planar element, wherein the periodic movement occurs in at least a portion of the planar element beyond the location of the piezoelectric element," (column 2 lines 9-34 and column 3 lines 32-33). It is inherent that the cellular telephone coupled to the

generator, reading on the claimed "integrated radio telephone structure which radio telephone comprises and audio amplifier."

However, although it is known in the art that the housing of cellular phones may comprise the antenna, and Saarma et al. clearly show and disclose that the piezo-electric member is assembled to the housing, Saarma et al. fail to explicitly disclose that the piezo-electric member or body of polymer belongs to the antenna.

In the same field of endeavor, Suzuki clearly shows and discloses a wireless call deliver volume receiver which improves the structure of the sounding body, reading on the claimed "integrated radio telephone structure," (paragraph 1). In the card type wireless call delivery volume receiver that has the cross-section horseshoe-shaped receiving antenna, which made the receiving machine box object serve a double purpose, one side of the receiving antenna of the wireless call delivery volume receiver is monotonous with a plate like piezoelectric transducer thin to the inside of a conductor, reading on the claimed "integrated radio telephone structure, which radio telephone comprises at least one planar element for both a first and a second function, said planar element belonging to an antenna in the radio telephone and the second function being periodic movement of said planar element, for which the structure comprises a piezoelectric element attached to said planar element," (paragraph 5).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a receiving antenna with a piezoelectric transducer as taught by Suzuki in the signal unit, reading on the claimed "integrated radio telephone structure," of Saarma et al. so it may more efficiently vibrate, flex, beep or emit audio signals (Saarma et al.; abstract).

7. **Claims 5-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Saarma et al. (U.S. Patent 6,198,206 B1)** in view of **Suzuki (JP 06224824 A)**, and in further view of **Siwiak et al. (U.S. Patent # 5,410,749)**.

Consider **claim 5**, and **as applied to claim 1 above**, Saarma et al., as modified by Suzuki, clearly show and disclose the claimed invention except that the antenna comprises a ground plane.

In the same field of endeavor, Siwiak et al. clearly show and disclose a radio communication device having a microstrip antenna comprising a planar antenna element having first and second major surfaces, and a ground plane coupled to the planar antenna element, reading on the claimed "antenna comprises a separate ground plane, said planar element being the ground plane" (figure 2 and column 1 lines 55-59).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a ground plane as taught by Siwiak et al. in the signal unit of Saarma et al., as modified by Suzuki, so it may more efficiently vibrate, flex, beep or emit audio signals (Saarma et al.; abstract).

Consider **claim 6**, the combination of Saarma et al. and Suzuki, as modified by Siwiak et al., clearly show and disclose the claimed invention **as applied to claim 5 above**, and in addition, Siwiak et al. further disclose first and second feeders, which may be conductive materials, that extend from the second surface of the planar antenna element and in the ground plane, reading on the claimed "piezoelectric element is attached to the ground plane at a first fixedly-supported end thereof, and the structure further comprises a second piezoelectric element which is attached to the ground plane at a second fixedly-supported end thereof" (figure 2 and column 3 lines 55-58).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to attach feeders, made of conductive materials, reading on the claimed "piezoelectric material," to a ground plane as taught by Siwiak et al. in the signal unit of Saarma et al., as modified by Suzuki, so it may more efficiently vibrate, flex, beep or emit audio signals (Saarma et al.; abstract).

Consider **claim 7**, and **as applied to claim 1 above**, Saarma et al., as modified by Suzuki, clearly show and disclose the claimed invention except that the cellular phone comprises a vibration oscillator and that a piezoelectric element is coupled to the oscillator and generates alarm vibration.

In the same field of endeavor, Siwiak et al. clearly show and disclose a radio communication device having a microstrip antenna comprising a planar antenna element having first and second major surfaces, and a ground plane

coupled to the planar antenna element. Siwiak et al. further disclose first and second feeders, which may be conductive materials, that extend from the second surface of the planar antenna element and in the ground plane. The first and second feeders are present to electrically couple signals intercepted by the planar antenna element with primary receiver element circuits which comprise a conventional RF amplifier, a local oscillator, a mixer, and associated filters, reading on the claimed "radio telephone comprises a vibration oscillator, a piezoelectric element being coupled to the vibration oscillator, whereby said periodic moving of the planar element is generation of alarm vibration" (figure 2, figure 5, column 1 lines 55-59, column 3 lines 55-58 and column 3 lines 60-65).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to attach an oscillator as taught by Siwiak et al. to the signal unit of Saarma et al., as modified by Suzuki, so it may more efficiently vibrate, flex, beep or emit audio signals (Saarma et al.; abstract).

8. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Saarma et al. (U.S. Patent 6,198,206 B1)** in view of **Suzuki (JP 06224824 A)**, and in further view of **Mähringer (U.S. Patent # 6,927,732 B2)**.

Consider **claim 9**, Saarma et al., as modified by Suzuki, clearly show and disclose the claimed invention **as applied to claim 1 above**, and in addition, Suzuki further disclose that that receiver circuit emits an acoustic wave, reading

on the claimed "sound waves coming from outside the planar element," when the receiving antenna receives a wireless call signal (paragraph 8).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the receiver circuit emit waves in response to an outside signal as taught by Suzuki in the signal unit of Saarma et al., so it may more efficiently vibrate, flex, beep or emit audio signals (Saarma et al.; abstract).

However, Saarma et al., as modified by Suzuki, fails to disclose that vibrations of planar element is caused by sound waves from outside generating electric signals.

In the same field of endeavor, Mähringer clearly shows and discloses a communication terminal provided with an electromagnetic transmission or receiving antenna, an acoustic converter, preferably housed in a mobile telephone, reading on the claimed "integrated radio telephone." A shaped membrane is incorporated in the surface of a planar antenna to generate sound. The membrane contains a piezo-ceramic layer. Piezo-electrical materials are characterized by a significant interaction between their electrical and mechanical characteristics, and by applying an electrical field mechanical deformations are produced. Mechanical pressure on these materials, however, generates electrical charges. This structure therefore allows sound signals to be picked up, reading on the claimed "periodic movement of the planar element is caused by sound waves coming from the outside the planar element, and said piezoelectric

element generates an electric signal corresponding to the sound waves" (abstract, column 2 lines 53-54, 59-60 and column 3 lines 4-10).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to allow the piezoelectric element to generate electrical charge as taught by Mähringer, in the signal unit of Saarma et al., as modified by Suzuki et al., in order to sense or provide tactile feedback or control (Saarma et al.; abstract).

Allowable Subject Matter

9. **Claim 8** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaime M. Holliday whose telephone number is (571) 272-8618. The examiner can normally be reached on Monday through Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jaime Holliday
Patent Examiner

NICK CORSARO
PRIMARY EXAMINER